

**XERANOBIUM LATICEPS (COLEOPTERA: ANOBIIDAE) REARED
FROM HAPLOPAPPUS TENUISECTUS (COMPOSITAE),
WITH DESCRIPTION OF THE LARVA¹**

MARTIN HETZ AND FLOYD WERNER

Department of Entomology, University of Arizona, Tucson, Arizona
85721.

Abstract.—Adults and larvae of *Xeranobium laticeps* Fall were removed from roots and root crowns of living *Haplopappus tenuisectus* (Greene) Blake in southern Arizona. Larvae were reared on an artificial diet for confirmation of larva-adult association. The larva is described.

Burroweed, *Haplopappus tenuisectus* (Greene) Blake, is an invader of depleted range lands and disturbed areas at lower elevations (2000–5500 ft) in southern Arizona, southern New Mexico, southwestern Texas, and northern Mexico. It often is abundant over large areas, sometimes the dominant vegetational cover, and is of primary concern to ranchers when it displaces grasses in heavily grazed areas. While sampling burroweed for insects in Pima and Pinal Counties, southern Arizona, we removed three adults and a number of larvae of anobiid beetles from roots and root crowns and took two adults from foliage. The beetles proved to be *Xeranobium laticeps* Fall.

MATERIALS AND METHODS

Haplopappus tenuisectus plants were dug from the soil with a 5-lb mattock. About 40 larvae were removed from the root systems and either placed in 1-oz plastic cups containing an artificial diet (Shorey and Hale, 1965) for rearing or preserved in KAAD (Peterson, 1948) and stored in 95% ethyl alcohol. Six larvae have been reared to the adult stage. They are slow in developing and may take well over a year to complete their life cycle in nature. Some that were incubated at 30°C were still feeding nearly two years after the time of their collection, but the artificial diet may lack an important nutrient, retarding larval growth.

Nine larvae, representing three general collecting sites, have been dis-

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sected and examined for distinguishing characters. For this examination the epipharynx, maxillae, labium, and antennae were cleared in KOH solution and mounted in Hoyer's medium on microscope slides.

DISCUSSION

The biology and larvae of many Anobiidae are known; but, of the genus *Xeranobium*, only the immature of *X. macrum* Fall has been described (Böving, 1954) and associated with a food plant, the composite *Spirostachys occidentalis* Walson. The adults of this rearing were apparently transferred to *X. californicum* White by White (1971). We have removed larvae and adults of a second *Xeranobium* species from the root system of *Haplopappus tenuisectus*. Larvae were in living tissue in the root crowns and upper portions of the tap roots of both young and healthy and old and declining plants (root crown diameters from about 10 mm to 70 mm). They were not abundant and caused little damage to their host, because of their small size.

White (1971), in his revision of the genus *Xeranobium*, provides one key for the separation of males of 23 species and another for nine species of definitely known females. Of the eleven *Xeranobium* adults we reared or collected, only three were males and can assuredly be determined to species. These, based primarily on genitalia and antennal structure, belong to *X. laticeps* Fall. The females do not fit any description closely enough for a reliable identification, mainly due to extreme variation in antennal segments 4–8. The form of these segments ranges from serrate to pectinate. For example, in one female segment 4 is 0.95 times as wide as long and segment eight 1.13; in another segment 4 is 1.38 and segment eight 2.17 times as wide as long. Although these females cannot be accurately determined by the use of an adult key, they must logically be associated with the *laticeps* males because of similarity in characters exhibited by all larvae examined and by the fact that all specimens were taken from the same part of the same host species in the same area.

Böving (1927, 1954) and Parkin (1933) have treated several larval Anobiidae in detail, and we have chosen to base the description of the immature stage of *X. laticeps* on the characters used by these authors, to permit comparison.

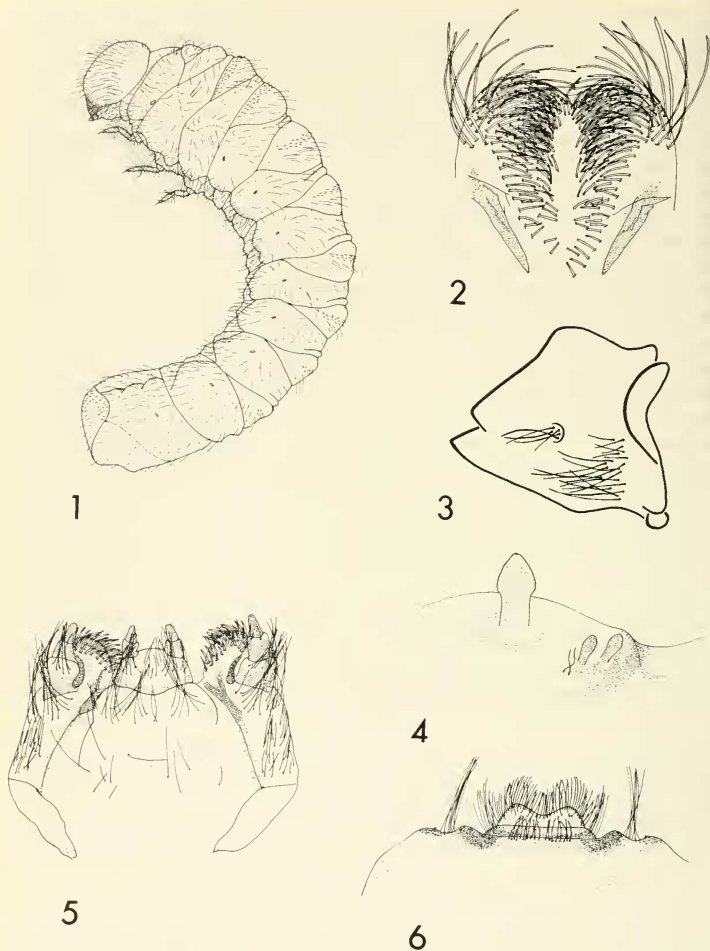
DESCRIPTION

General (Fig. 1).—Larva (presumably full grown) scarabaeiform, up to 12 mm long, and clothed with long, fine, golden setae, these longer and denser on hypopleural folds and not obscuring surface. Color, including head capsule, near white. Thorax swollen to 1.26× width of abdomen. Abdominal segments 1–6 uniform in width, terminal segments slightly wider. Asperities present on metathorax and abdominal segments 1–7. All spiracles with accessory chambers. These vary markedly in number, size, and positioning.

even in the 2 spiracles on 1 segment. In general, they are on the anterior margin of the mesothoracic spiracles and on the posterior margin of all 8 abdominal pairs.

Head.—Head capsule perpendicular to longitudinal axis of body, broadest at $\frac{2}{3}$ below vertex, truncated at epistome, with sides evenly rounded, and covered with long, fine, golden setae which become shorter at vertex. Epistome (Fig. 6) darkly pigmented except in a median area about width of labrum, with setae along base of clypeus, and with a tuft of fine, longer setae above and mesal to each antenna. Ocelli absent. Antennae (Fig. 4) minute, bearing 1 lightly sclerotized conical appendix and 2 darker basiconical processes that have 2 minute setae near the base. Labrum emarginate, narrower than clypeus, and fringed with fine setae. Epipharynx (Fig. 2) covered on apical $\frac{1}{3}$ with long, curved setae directed mesad; those in remaining $\frac{2}{3}$ becoming a row on each side of midline, several deep, and fewer and shorter until only a few anteriorly pointed setae are present between tips of tormae; lateral marginal setae pointed with remaining setae blunt. Midline naked. Tormae darkly sclerotized. Mandibles (Fig. 3) large, dark brown to black, with 2 teeth on lower leading edge (anterior margin), and 2 groups of setae: proximal aboral group of about 15 long, fine setae arranged in vertical column, and distal group of about 5 stouter, slightly shorter setae set in a large, deep, central pit. Marginal brush absent. Anterior margin above teeth smooth, nearly straight, and with a slight bulge before rounding off above. Labial palpi 2-segmented, lightly sclerotized, and with no setae (Fig. 5). Mentum mostly membranous, rounded trapezoidal, with a band of fine setae, its basal margin lightly sclerotized. Submentum membranous, with a transverse band of fine setae on apical $\frac{1}{2}$ and a few scattered setae on basal $\frac{1}{2}$. Maxillary palpi 3-segmented; basal segment with fine setae about apex, 2nd segment with only 2 or 3 very small setae apically. Galea with stout, inward curving, sharp-pointed setae and with lower $\frac{2}{3}$ of outer edge forming a heavily sclerotized, comma-shaped support. Lacinia shorter than and about as wide as galea, densely margined with long, straight, stout setae. Stipes straight-sided, slightly longer than cardo, its basal $\frac{2}{3}$ with many fine, appressed setae, and apical $\frac{1}{3}$ with longer erect setae that reach to tip of palpus. Stipital rods darkly sclerotized, Y-shaped, with 1 branch extending into base of galea. Cardo elongate, about $4\times$ as long as wide, lightly sclerotized at base, naked.

Thorax.—Legs clothed with long, fine setae and ending in a single claw. Pleural folds bulging between sulci and meso- and metathorax divided approximately in $\frac{1}{2}$ by a sinuate, longitudinal depression. Prothorax with narrow, elliptical, mesothoracic spiracles in pleural fold at its posterior edge, and with 1 notal fold. Mesothorax with 1 notal fold. Metathorax with a large prenotal fold bearing asperities on its anterior face, in 3 rows dorsally and scattered below.



Figs. 1-6. Larval *Xeranobium*. 1. Full grown larva, 8.3 \times . 2. Epipharynx, ventral view, 116 \times . 3. Left mandible, anterior view, 71 \times . 4. Antenna, 790 \times . 5. Maxillae and labium, ventral view, 5.3 \times . 6. Epistome, dorsal view, 36 \times .

Abdomen.—Segments 1–7 with broad prenotal folds bearing asperities in 2 or 3 rows dorsally, scattered below, and segments 1–6 with narrow post-notal folds. Asperities on segments 1–5 in broader bands than those on segments 6 or 7. Segment 8 cylindrical, without folds. Terminal segment with a crescent of asperities laterally.

All specimens are being held in the insect collection at the University of Arizona, Tucson.

The most noticeable differences between larvae of *Xeranobium laticeps* and *X. californicum* lie in the labrum, epipharynx, and spiracles. Böving's description of *californicum* states that the labrum is approximately circular, that some posterior setae of the epipharynx (between tips of tormae) are fan-shaped, others hook-shaped, and that the spiracles lack accessory chambers. In *X. laticeps*, the labrum is emarginate, all posterior epipharyngeal setae are blunt and similar, and all spiracles have accessory chambers. In addition, there is no pigmentation on the epistome of *X. californicum*, while more darkly pigmented areas exist on that of *X. laticeps*. No mention is made of a heavily sclerotized comma-shaped structure in the lateral edge of the galea in *X. californicum*, such as exists in *X. laticeps*. The mandibles are similar in outline but differ in the size and number of setae contained in each of the two groups. *Xeranobium laticeps* is larger, about 12 mm, compared with 7 mm for *X. californicum*.

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